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EVALUATION OF CIRCUMVENT® PCV M ADMINISTERED DURING AN EARLY FIELD INFECTION

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Introduction- Vaccination for porcine circovirus Type 2 (PCV2) is a widespread practice in swine herds worldwide and the disease is fairly well controlled in most situations. However, clinical cases of early infection appear to be increasing due to vertical transmission from dams to their pigs or increased contamination of facilities after weaning. These early infections coincide with vaccination so vaccine efficacy can potentially be impaired. The data reported here was derived from a vaccination/challenge study that was revised due to PCV2 contamination of the pigs prior to movement from the sow farm to a contract research facility. The study was continued with regard to vaccinations and sample collection but the pigs were moved into the wean-to-finish facility that normally is stocked from this sow herd. This situation enabled us to follow the dynamics of a PCV2 field infection during the time of vaccination.

Materials and Methods- The sow farm is located in SE Iowa and is free of PRRS and *Mycoplasma hyopneumoniae* (Mhp) and endemically infected with PCV2. The pigs were blood sampled and allocated to treatment by litter, gender and weight at 1 week of age. The pigs were blood sampled again at 3, 6, 8 and 10 weeks of age and vaccinated with Circumvent® PCV M (PCVM) or not (control group – CONT) at 3 and 6 weeks of age. Laboratory testing was done at the Iowa State University Veterinary Diagnostic Laboratory (PCV2 PCR, Baculovirus ELISA and Mhp Tween 20 ELISA, and IFAs at 3, 5, 8 and 10 weeks of age) or the Kansas State Veterinary Diagnostic Laboratory (PCV2 IFA at 1 week of age). Still pending are plans to further sample the pigs at 14, 18, 22 and 26 weeks.

Results- Table 1 presents the PCR and IFA test results. One PCVM vaccinated pig became PCV2 PCR positive at 3 weeks of age but was negative by 8 weeks of age. Five PCVM vaccinated pigs became PCR positive at 6 weeks age; 2 remained positive at low levels, 2 were negative by 10 weeks of age and the fifth pig had a high level of viremia. In the CONT group, the 5 pigs that were PCV2 PCR negative at 10 weeks of age had IFA titers of ≥1280 at one week of age. The vaccinated pigs developed IFA titers by 8 weeks of age while the controls started to seroconvert by 10 weeks of age.

Table 1: PCR and IFA Results

Age (wks)	PCR - Pos./Tested		IFA Titers	
	PCVM	CONT	PCVM	CONT
1	0/25	0/25	34.8	52.8
3	1/25	1/24	ND	ND
6	5/25	3/24	302.7	127.0
8	6/25	16/24	892.6	142.5
10	6/25	19/24	1177.8	604.1

Quantitative PCR was performed on the 10 week samples to determine the level of PCV2 viremia. The average genomic copies per mL for the CONT group averaged 1.8×10^6 while the PCVM group was 4.9×10^4, a 97.3% reduction. As mentioned above, one pig in the PCVM group had a high level of viremia (1.2×10^6 copies per mL). If this pig was excluded, the copies/mL for the PCVM group was 1.1×10^2 (950 max.). Interestingly, this pig failed to respond serologically to the Mhp fraction of PCVM while all other vaccinated pigs had high titers at 8 and 10 weeks of age (data not shown). Conversely, this pig, and all other PCVM vaccinated pigs, developed high titers in the Baculovirus ELISA (data not shown).

Conclusions and Discussion- Early field infection with PCV2, which coincides with the time of vaccination, appears to be increasing in frequency. The data from this study suggest that vaccination with Circumvent® PCV M can effectively control PCV2 field infections that occur simultaneous with vaccination. However, the qPCR result from the one vaccinated pig with a high level of viremia suggests that reducing the age at vaccination may be warranted in some situations.